## GALLAWAY PITS SUPERFUND SITE

## FIVE-YEAR REVIEW SEPTEMBER 28, 2000



U.S. Environmental Protection Agency Region IV

### **EPA Five-Year Review Signature Cover**

#### **Key Review Information**

Site Identification						
Site name: Gal	Site name: Gallaway Pits Superfund Site			EPA ID: TND980728992		
Region: 4	State: TN	City/County	: Fayette Cou	inty _		
		Site	Status			
NPL status: De	leted					
Remediation s	tatus (under cor	nstruction, op	erating, comp	olete): complete		
Multiple OU's*	(highlight):	Υ <u>Ν</u>				
Construction co	ompletion date:	10/87				
Fund/PRP/Fed lead: Fund	Fund/PRP/Federal facility Lead agency: State lead: Fund					
Has site been	put into reuse?	(highlight):	<u>Y</u> N			
		Reviev	v Status			
Who conducte	d the review (E	PA Region, S	State, Federal	agency): EPA Region 4		
Author name:	Robert West	Author title	RPM			
Author affiliation	on: Project Man	ager				
Review period	: ** September :	2000	Date(s) of si	te inspection: NA		
Highlight:	Statutory*** Policy	Policy Type (name): 1. Pre-SARA 2. Ongoing 3. Removal only 4. Regional Discretion		Review number (1, 2, etc.) 2		
Triggering action event: **** Wastelan						
Trigger action date: 10/1993						
Due date: 10/1997						

<sup>\* [&</sup>quot;OU" refers to operable unit.]

<sup>\*\* [</sup>Review period should correspond to the actual start and end dates of the five-year review in WasteLAN.]

<sup>\*\*\* [</sup>see page B-8 and Chapter 1 for further explanation.]

<sup>\*\*\*\* [</sup>see page B-9 and Chapter 1 for further explanation.]

Deficiencies:
None
Recommendations and Required Actions:
EPA Region 4 has concluded that a second five-year review is not needed at the Gallaway Ponds site in Fayette County, Tennessee. This report will be the last review of any kind needed at the Gallaway Ponds site. Neither Operation and Maintenance (O&M) activities nor Five-year Reviews are applicable at this site because of remedial actions taken by the Tennessee Department of Environment and Conservation (TDEC). TDEC, without notification to EPA, conducted remedial actions in August 1997 that removed all hazardous substances from the site (attachment 1), hence the cease of Federal Superfund involvement at this site.
Protectiveness Statement(s):
NA
Other Comments:
Signature of EPA Regional Administrator or Division Director and Date
Richard D. Green, Director Waste Management Division  AG SW 00  Date

#### I. Introduction

EPA Region 4 has conducted a second five-year review of the remedial actions implemented at the Gallaway Pits Site in Fayette County, Tennessee. This review was conducted in September 2000. This report documents the results of the review. The purpose of the five-year reviews is to determine whether the remedy at a site is protective of human health and the environment. The methods, findings, and conclusions of reviews are documented in five-year review reports. In addition, five-year review reports identify deficiencies found during the review, if any, and identify recommendations to address them.

This review is required by policy. EPA must implement five-year reviews consistent with the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) and the National Oil and Hazardous Substances Pollution Contingency Plan (NCP). CERCLA §121(c), as amended, states:

If the President selects a remedial action that results in any hazardous substances, pollutants, or contaminants remaining at the site, the President shall review such remedial action no less often than each five years after the initiation of such remedial action to assure that human health and the environment are being protected by the remedial action being implemented.

The NCP part 300.430(f)(4)(ii) of the Code of Federal Regulations (CFR) states:

If a remedial action is selected that results in hazardous substances, pollutants, or contaminants remaining at the site above levels that allow for unlimited use and unrestricted exposure, the lead agency shall review such action no less often than every five years after the initiation of the selected remedial action.

This is the second five-year review for the Gallaway Pits Site. The trigger for this policy review is the first five-year review date shown in EPA's WasteLAN database: October 4, 1993. However, due to the fact that the Tennessee Department of Environment and Conservation (TDEC) conducted a removal action of all wastes contained onsite. Region 4 has concluded that a second five-year review is not needed at the Gallaway Ponds site in Fayette County, Tennessee. This report will be the last review of any kind needed at the Gallaway Ponds site. Neither Operation and Maintenance (O&M) activities nor Five-year Reviews are applicable at this site because of remedial actions taken by the Tennessee Department of Environment and Conservation (TDEC). TDEC, without notification to EPA, conducted remedial actions in August 1997 that removed all hazardous substances from the site (attachment 1), hence the cease of Federal Superfund involvement at this site. The remedial action performed July 1997 consisted of the landfill cap; the excavation, transportation and off-site disposal of the waste material, the re-grading of the pit, and the abandonment of the eight monitoring wells. After the cap was removed, a total of 12,074 tons of waste were removed and sent to the BFI-North Shelby Landfill for disposal. Once all the waste was removed, nine

confirmatory samples were taken and were all below detections levels. Finally, the monitoring wells were filled with grout slurry and the well casing were removed. For more information please refer to attachment 1.

#### II. Site Chronology

**Table 1: Chronology of Site Events** 

Date	Event
1/80	Initial discovery of the problem
10/81	Removal action
9/83	NPL listing
9/86	RI/FS complete
9/26/86	ROD signature
6/87	Remedial design start
3/88	Remedial design completion
6/87	RA start
6/87	Construction start
10/87	Construction finish
10/87	Construction completion
10/4/93	First five-year review report

#### III. Background

The Gallaway Pits Site (five-acres) was extensively mined for sand and gravel, producing a landscape dotted with water-filled pits up to 50 feet deep. Some of the pits have been used for disposal of liquid and solid waste (mainly pesticide or pesticide residues), glass jars and drums. The site was proposed for inclusion on the National Priorities List (NPL) in December 1982 and appeared on the final NPL in September 1983. The primary factor contributing to the site being on the NPL was the potential for groundwater contamination. Preliminary sampling of the pond water and sediments showed elevated levels of pesticides (i.e. Chlordane, Endrin, and Lindane). The groundwater samples did not reveal any contamination; however, potential existed for groundwater contamination because of the types and quantities of waste at the site. Finally, run off from the site threatened off-site biota.

In October 1983, the EPA conducted an emergency cleanup. The cleanup consisting of the excavation and offsite disposal of contaminated sludge and the onsite treatment of the pond water.

The treatment process involved the carbon filtration of the pond water to limits established by the Tennessee Department of Health and Environment (TDHE), Division of Water Quality Control.

In February 1984, EPA obligated funds to conduct a Remedial Investigation/Feasibility Study (RI/FS). NUS Corporation was tasked to perform the RI/FS. Based on extensive discussions with the EPA On-Scene Coordinator for the federal cleanup action and a review of site background data, it was determined that a RI would be appropriate for this site. The Remedial Investigation Report was finalized in April 1986. The draft Focused Feasibility Study was completed in June 1986 and finalized in September 1986. The public comment period ended on August 12, 1986.

#### **Community Relations Activities**

The State and EPA agreed that community relations activities at the site would be conducted in accordance with the approved community relations plans. In conducting community relations activities pursuant to this CA, EPA and the State agreed to comply with all relevant EPA policy and guidance on community relations programs and procedures. Additional community efforts were not determine to be necessary owing to the fact that these corrective efforts were directed at previous remedial work that met all guidance for community relations programs and procedures.

#### **Remedial Investigation Results**

The Focused Remedial Investigation Report included a sampling program for each of the potentially affected environmental media: surface water, sediment, surface soils, and groundwater. The following sections describe the results of this investigation:

#### 1. Onsite Surface Water/Sediment (Ponds 1-9)

Contaminants detected in the surface waters of Ponds 1, 2, 5, 8, and 9 exceed the acute Ambient Water Quality Criteria (AWQC) for the following parameters: Pond I - Chlordane, Pond 2 - Toxaphene, Pond 5 - Cadmium, Pond 8 - Arsenic, and Pond 9 - Cadmium.

Chronic AWQC limits were exceeded in Ponds 1, 2, 3, 4, 8, and 9 for pesticides and in Ponds 5, 8, and 9 for inorganics. These contaminant levels were high enough to be harmful to aquatic life and probably preclude the presence of many sensitive species in the ponds.

The sediment in Ponds 1, 2, 3, 4, 8, and 9 showed pesticide contamination. Chlordane is the most prevalent contaminant, with a few occurrences of Dieldrin and Toxaphene. The sediment in Pond 7 contained Cadmium above background levels, while Ponds 8 and 9 contained high levels of Arsenic.

#### 2. Onsite Surface Soils

Chlordane was detected in the surface soils around the northern half of Pond 1 and between Ponds

1 and 9. Arsenic and Cadmium were also detected in the surface soils. Similar levels of Arsenic were detected over much of the site; however, arsenic was detected in two background locations and therefore may not be site-related. Cadmium was detected in a sample located west of Pond I, which was the same sample that contained the highest Chlordane value. Cadmium was also detected in a sample that was located between Ponds 1 and 3.

#### 3. Onsite Subsurface Soil/Groundwater

No pesticides were detected in the subsurface soil sample located west of Pond I. Samples were collected at 5-foot intervals from a depth of 5 feet to a depth of 52 feet. As a class, pesticides have low mobility and, therefore, are unlikely to migrate to any great depth. Chloroform, a common laboratory solvent, was estimated to be present at very low levels (less than the contract-required detection limit) in the upper 10 feet of the boring. Other volatiles, which were not found elsewhere on site, were found in the deepest subsurface sample at a depth of 51 feet. This sample was collected from within the top of the Jackson Clay Formation. Cadmium was also present in this sample.

#### **Risk Assessment**

A quantitative risk assessment was performed for various contaminant exposure pathways. Risks for the exposure pathways were calculated for the site for the conditions of both mining and no mining. Based on the available data and risk assessment assumptions, the exposure pathways presented no unacceptable risks to human receptors. The only unacceptable risk presented by the Site was the potential risk to off site biota that could occur if Ponds 1,2, or 5 would overflow to off site tributaries.

#### IV Remedial Actions

#### A. Record of Decision Finding

The Record of Decision (ROD) outlined the following selected remedial actions:

Dilution of water in Ponds 1, 2, and 5 with city water to meet Ambient Water Quality Criteria and subsequent discharge to an unnamed tributary of Cane Creek;

Excavation of contaminated sediments from Ponds 2 and 5, and consolidation of these sediments in Pond 1;

Institutional controls, such as fencing around Pond 1, restriction on mining, and methods to ensure that future land uses are compatible with the selected remedy;

Proper site closure under Subtitle C of RCRA, including capping of Pond 1;

Operation and Maintenance (O&M) activities that include groundwater monitoring inspection and maintenance of cap.

#### **B.** Remedy Implementation

The EBASCO Services, Inc. was tasked to perform a Remedial Design for the selected actions recommended by the ROD at the Site. Listed below are the design criteria:

- Determine a kiln dust/sediment ratio for the solidification process;
- Determine the below grade excavation configuration of Pond 1 to store the solidified waste;
- Design a RCRA cap over the below grade configuration;
- Determine the safety factor against bearing capacity failure of foundation soils underlying the solidified waste and RCRA cap;

Perform an effective analysis of foundation soils to check for possible detrimental settlement of RCRA cap;

- Design a gas recovery system based on the characteristics of the known contaminants and the solidification process;
- Design a drainage ditch system to collect and route runoff away from the RCRA cap;
- Provide performance specifications for construction of the cap and guidelines for testing and observations;
- Determine a revised above grade configuration based on the actual volume of solidified waste placed in Pond 1.

#### C. Construction Activities Performed

Construction activities were initiated in June 1987 at the site. These activities are described below:

Phase 1 - Pond Water Sampling

Prior to beginning the Removal Action, surface water and sediment samples were collected for chemical analysis and bioassay tests to determine the current-level of contamination in Ponds 1, 2, and 5. Based on the analytical results, EPA concluded that onsite treatment was not required prior to discharge and that the water could be released directly to an unnamed tributary of Cane Creek without stressing natural biota.

Phase 2 - Water Evacuation of Ponds 1, 2, and 5

Water was evacuated from Ponds 1, 2, and 5 using high velocity pumps to a nearby tributary. In addition, trees and brush were cleared from the pond banks.

#### Phase 3 - Solidification and Excavation of Pond Sediments

Contaminated sediments from Ponds 2 and 5 were mixed with kiln dust (990 tons) for solidification. The solidified sediments were excavated from Ponds 2 and 5, and were transported to Pond I for compaction. Pond 1 (containment cell) was enlarged to accommodate additional sediments from Pond 5. The total volume of material (kiln dust and solidified sediment) placed and compacted (99 percent) in the containment cell was estimated to be 9,200 cubic yards.

Sediment samples from Ponds 2 and 5 were periodically collected and analyzed during this phase to ensure that the clean-up goals stated in the ROD were achieved.

#### Phase 4 - Construction of RCRA Cap

The Agency constructed a RCRA approved cap over the containment cell as per Remedial Design specifications. The cap consists of a 10-inch gas extraction layer followed by a 24-inch compacted clay layer covered with flexible membrane liner (FML), a 12-inch drainage layer and a 24-inch thick vegetated top cover (seeded with Bermuda grass). The side slopes and drainage ditch were covered with 1 to 3 inch riprap.

#### Phase 5 - Site Closure

Under the Emergency Response Control Section's (ERCS) Technical Assistant Team (TAT) supervision, a six-foot chainlink fence was installed with a locking gate. The fence completely encompasses the RCRA cap and three monitoring wells.

#### Phase 6 - Monitoring Well Installation

Two additional groundwater monitoring wells were installed on the site. The wells (9A-52 feet and 9B-39 feet) were drilled above the Jackson Clay Formation.

#### D. Progress Since the Last Five-Year Review

During the first five-year review, the remedy was found to be protective of human health and the environment, however some deficiencies were noted. Additional remedial activities were conducted at the site (Fall 1994) to correct deficiencies that had gradually developed from lack of Operation and Maintenance (O&M) activities. Corrective actions needed were as follows:

• Excavate soil from around base of protective covers for Monitoring wells (MW) 3,4 & 7. Correct any deficiencies that exist.

- Repair or replace concrete pads on MW's 1 & 2.
- Assess integrity/usefulness of MW 1 by sounding, sampling or other technique.
- Consistence with results from 3, repair cover and lock or install new up gradient MW.
- Re-sampling monitoring for site contaminants and include metals, field pH and field conductivity.
- Mow and remove trees/saplings from exclusion zone.
- Sample pond water to determine if leaching is occurring.
- Fill ponds and grade exclusion zone.
- Regrade cap.

To satisfy the above list, the EPA and state of Tennessee entered into a cooperative agreement Fall 1994.

OHM Corporation conducted remedial construction activities at the site from September through November 1994. Actual field sampling of monitoring well commenced on October 3, 1994. All of the corrective actions described above were completed during this period. All significant corrective activity was completed by November 14, 1994. OHM Corporation sampled ground water from monitoring wells 1-4, 6, 7 and 9B at the site. Analysis was conducted for pesticides, metals and organics. Temperature, pH and conductivity were also measured. The contaminants of concern (i.e. pesticides) only two wells showed detectable levels, neither of which is above MCLS. MW-7 had 0.002 mg/L of chlordane and MW-6 had O.OM3 mg/L of dieldrin. Slight exceedances above MCLs or action levels of metals including barium, chromium, copper, lead, manganese, nickel and zinc were reported from most of the wells sampled. The confidence level is very high that the source of the metals are a result of leaching from monitoring well casing, especially considering that relatively low pH were measured at the time of the sampling event.

The State conducted sampling of water from a pond adjacent to the cap area that was to be drained and filled. The water in this pond was transferred to another on-site pond. The purpose of this sampling was to define if leaching from the waste under the cap appeared to be occurring. No contaminants of concern were detected in the pond water samples, so no evidence of leaching from the capped area was interpreted. However, various levels of several metals were detected in the pond water sample. No impact to previous remedial action at the site is judged to have resulted from these corrective activities.

#### V Recommendation and Required Action

EPA Region 4 has concluded that a second five-year review is not needed at the Gallaway Ponds site in Fayette County, Tennessee. This report will be the last review of any kind needed at the Gallaway Ponds site. Neither Operation and Maintenance (O&M) activities nor Five-year Reviews are applicable at this site because of remedial actions taken by the Tennessee Department of Environment and Conservation (TDEC). TDEC, without notification to EPA, conducted remedial actions in August 1997 that removed all hazardous substances from the site (attachment 1), hence the cease of Federal Superfund involvement at this site.

#### **Attachment(s):**

Attachment A: TDEC Remedial Action Report

## Attachment 1



## STATE OF TENNESSEE DEPARTMENT OF ENVIRONMENT AND CONSERVATION

Division of Superfund 4<sup>th</sup> Floor, L&C Annex 401 Church Street Nashville, TN 37243-1538

13 March, 2000

Mr. Robert West U.S. Environmental Protection Agency Waste Management Division Atlanta Federal Center 61 Forsyth Street, SW Atlanta, GA 30303

RE: Gallaway Pits, Gallaway, Fayctte County, Tennessee

EPA Site #TND980728992 TDSF Site # 24-503

Subject: Recommendation for Archival

Dear Mr. West:

The Tennessee Division of Superfund (TDSF) hereby transmits a copy of the Remedial Action Report for the Gallaway Pits site. TDSF recommends that this site be considered for archival from the CERCLIS listing, since no contamination remains on-site.

If you have any questions, call me at (615) 532-0984 or e-mail me at tstewart2@mail.state.tn.us.

Sincerely,

Tim Stewart

Voluntary Cleanup, Oversight, and Assistance Program

Division of Superfund

XC: TDSF Central Office and EAC - Memphis File

DIVISION OF SUPERFUND 1997 OCT -8 PM 2: 05 TEMNESSEE DEPARTMENT OF ENVIRONMENT AND CONGERVATION

#### REMEDIAL ACTION REPORT

#### **FOR**

# GALLAWAY PITS GALLAWAY, FAYETTE COUNTY TDSF SITE NUMBER 24-503

**AUGUST 22, 1997** 

Prepared by

TENNESSEE DIVISION OF SUPERFUND Nashville Environmental Field Office 537 Brick Church Park Drive Nashville, Tennessee 37207

#### DESCRIPTION OF WORK PERFORMED

The remedial action performed in July, 1997 consisted of the removal of the landfill cap; the excavation, transportation and off site disposal of the waste material, the re-grading of the pit, and the abandonment of the eight monitoring wells.

The cap consisted of four (4) inches of river gravel, a geotextile fabric, two (2) feet of soil, a geotextile fabric, three (3) feet of soil, one (1) foot of sand, a geomembrane, three (3) feet of clay, and six (6) inches of sand. The gas vent outlet pipes on top of the cap extended only through the first geotextile layer and was not connected to any additional piping. The gas collection piping in the top layer of sand was left over well screen and was not connected together in any fashion. One sample was taken at the request of the Tennessee Division of Solid Waste Management prior to the issuance of the Special Waste permit.

After removal of the cap, 12,074 tons of waste were removed and sent to the BFI - North Shelby Landfill for disposal. Once all waste was removed, nine confirmatory samples were taken from the pit bottom and were below detection levels. Once the sample results were received, the north and south sides of the pit were sloped and the bottom was leveled off. A trench was cut in the southeastern comer of the pit to aid in stormwater removal. All re-grading work was performed as per the wishes of the property owner who expects to mine gravel and sand from the pit and pit area.

The monitoring wells were filled with a bentonite - cement grout slurry utilizing a grout plant and tremie pipe. Once the slurry set-up, the well casings were removed to at least thirty (30) inches below ground surface. The disturbed area around the church well was seeded with fescue.

Nine confirmatory samples were taken from the pit bottom and run for TCLP pesticides/ herbicides. The samples were taken on a grid system and showed concentrations below the detectable limits.

No variations from the Request for Bids information was required. The actual amount of waste removed, 8,341 cubic yards, was less than the anticipated volume of waste, 9,200 cubic yards.

#### **VOLUME AND DESCRIPTION OF MATERIAL REMOVED**

The waste material removed consisted of a blend of chlordane and toxaphene contaminated sediment that had been stabilized with fly ash and possibly some Portland Cement. The blending was performed by US EPA in 1982.

#### **FINAL LOCATION OF THE MATERIAL**

The waste material was taken to BFI - North Shelby Landfill for disposal. Attached are copies of the waste manifests for the project.

#### TOTAL ITEMIZED COST OF THE PROJECT

Attached.

#### ANALYTICAL REPORT

2960 Foster Creighton Drive Nashville, Tennessee 37204

\* Original report and a copy of the chain of custody will follow by mail.

FOUR SEASONS 4522 ATTN. STUART EILAND

504 INTERSTATE BLVD. SOUTH

NASHVILLE, TN 37210 Lab Number: 97-A063060

Sample ID: #6 Date Collected: 7/30/97

Project: 97-15027 Time Collected: 6:00

Project Name: GALLAWAY PITS Date Received: 7/31/97

Sampler: J. JOBE Time Received: 9:00

State Certification: 02008 Sample Type: Solid Waste

#### **TCLP Results**

Analyte	Result	Units	Reg Limit	Matrix Spike Recovery (%)	Date	Method
Arsenic	< 0.10	mg/l	5.0	102	8/1/97	6010A
Barium	<1.00	mg/l	100	93	8/1/97	6010A
Cadmium	< 0.10	mg/l	1.0	102	8/1/97	6010A
Chromium	< 0.50	mg/l	5.0	95	8/1/97	6010A
Lead	< 0.50	mg/l	5.0	95	8/1/97	6010A
Mercury	< 0.010	mg/l	0.20	93	8/1/97	7471
Selenium	< 0.10	mg/l	1.0	114	8/1/97	6010A
Silver	< 0.10	mg/l	5.0	92	8/2/97	6010A
Chlordane	< 0.015	mg/l	0.030	106	8/2/97	8080
2,4-D	< 5.0	mg/l	10.0	127	8/2/97	8150
Endrin	< 0.0100	mg/l	0.02	127	8/2/97	8080
Heptachlor	< 0.0050	mg/l	0.008	78	8/2/97	8080
Lindane	< 0.200	mg/l	0.4	85	8/2/97	8080
Methoxychlor	<1.0	mg/l	10.0	96	8/2/97	8080
Toxaphene	< 0.250	mg/l	0.50	98	8/2/97	8080
Silvex	< 0.50	mg/l	1.0	97	8/2/97	8150
Heptachlor Epoxide	< 0.0050	mg/l	0.008	93	8/2/97	8080
TCLP Extraction	COMPLET	ED			8/1/97	1311

#### ND = Not detected at the report limit.

Surrogate	% Recovery	Target Range
Pest/PCB Surrogate, TMX	71.0	22 135.
Pest/PCB Surrogate, DBC	48.0	22 135.
Herbicide Surr., DOAA	71.	15 135.

ANALYTICAL REPORT

2960 Foster Creighton Drive Nashville, Tennessee 37204

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FOUR SEASONS 4522 ATTN: STUART EILAND

504 INTERSTATE BLVD. SOUTH Lab Number: 97-A063060

NASHVILLE, TN 37210

Sample ID: #6 Date Collected: 7/30/97

Project: 97-15027 Time Collected: 6:00

Project Name: GALLAWAY PITS Date Received: 7/31/97

Sampler: J. JOBE Time Received: 9:00

State Certification: 02008 Sample Type: Solid waste

\*\* SURROGATE RECOVERIES \*\*

Surrogate % Recovery Target Range

Report Approved By: Report Date: 8/27/97

#### ANALYTICAL REPORT

2960 Foster Creighton Drive Nashville, Tennessee 37204

Original report and a copy of the chain of custody will follow by mail.

FOUR SEASONS 4522 ATTN. STUART EILAND

504 INTERSTATE BLVD. SOUTH

NASHVILLE, TN 37210 Lab Number: 97-A063061

Sample ID: #7 Date Collected: 7/30/97

Project: 97-15027 Time Collected: 6:15

Project Name: GALLAWAY PITS Date Received: 7/31/97

Sampler: J. JOBE Time Received: 9:00

State Certification: 02008 Solid Waste Sample Type:

#### **TCLP Results**

TODI TODUNG		Matrix Spik	Matrix Spike			
Analyte	Result	Units	Reg Limit	Recovery (%)	Date	Method
Arsenic	< 0.10	mg/l	5.0	102	8/1/97	6010A
Barium	<1.00	mg/l	100	93	8/1/97	6010A
Cadmium	< 0.10	mg/l	1.0	102	8/1/97	6010A
Chromium	< 0.50	mg/l	5.0	95	8/1/97	6010A
Lead	< 0.50	mg/l	5.0	95	8/1/97	6010A
Mercury	< 0.010	mg/l	0.20	93	8/1/97	7471
Selenium	< 0.10	mg/l	1.0	114	8/1/97	6010A
Silver	< 0.10	mg/l	5.0	92	8/1/97	6010A
Chlordane	< 0.015	mg/l	0.030	87	8/2/97	8080
2,4-D	< 5.0	mg/l	10.0	135	8/2/97	8150
Endrin	< 0.0100	mg/l	0.02	124	8/2/97	8080
Heptachlor	< 0.0050	mg/l	0.008	78	8/2/97	8080
Lindane	< 0.200	mg/l	0.4	82	8/2/97	8080
Methoxychlo	<1.0	mg/l	10.0	94	8/2/97	8080
Toxaphene	< 0.250	mg/l	0.50	71	8/2/97	8080
Silvex	< 0.50	mg/l	1.0	144	8/2/97	8150
Heptachlor Epoxide	< 0.0050	mg/l	0.008	92	8/2/97	8080
TCLP Extraction	COMPLETED	-			8/1/97	1311

#### ND = Not detected at the report limit.

Surrogate	% Recovery	Target Range
Pest/PCB Surrogate, TMX	57.0	22 135.
Pest/PCB Surrogate, DBC	78.0	22 135.
Herbicide Surr., DOAA	46.	15 135.

#### SPECIALIZED ASSAYS ENVIRONMENTAL ANALYTICAL REPORT

2960 Foster Creighton Drive Nashville, Tennessee 37204

\* Original report and a copy of the chain of custody will follow by mail.

FOUR SEASONS 4522 ATTN: STUART EILAND

504 INTERSTATE BLVD. SOUTH Lab Number: 97-A063061

NASHVILLE, TN 37210

Sample ID: #7 Date Collected: 7/30/97

Project: 97-15027 Time Collected: 6:15

Project Name: GALLAWAY PITS Date Received: 7/31/97

Sampler: J. JOBE Time Received: 9:00

State Certification: 02008 Sample Type: Solid waste

\*\* SURROGATE RECOVERIES \*\*

Surrogate % Recovery Target Range

Report Approved By: Report Date: 8/27/97

#### ANALYTICAL REPORT

2960 Foster Creighton Drive Nashville, Tennessee 37204

n Original report and a copy of the chain of custody will follow by mail.

FOUR SEASONS 4522 ATTN. STUART EILAND

504 INTERSTATE BLVD. SOUTH

NASHVILLE, TN 37210 Lab Number: 97-A063062

Sample ID: #8 Date Collected: 7/30/97

Project: 97-15027 Time Collected: 6:30

Project Name: GALLAWAY PITS Date Received: 7/31/97

Sampler: J. JOBE Time Received: 9:00

State Certification: 02008 Sample Type: Solid Waste

**TCLP Results** 

				Matrix Spike		
Analyte	Result	Units	Reg Limit	Recovery (%)	Date	Method
Arsenic	< 0.10	mg/l	5.0	102	8/1/97	6010A
Barium	<1.00	mg/l	100	93	8/1/97	6010A
Cadmium	< 0.10	mg/l	1.0	102	8/1/97	6010A
Chromium	< 0.50	mg/l	5.0	95	8/1/97	6010A
Lead	< 0.50	mg/l	6.0	98	8/1/97	6010A
Mercury	< 0.010	mg/l	0.20	93	8/1/97	7471
Selenium	< 0.10	mg/l	1.0	114	8/1/97	6010A
Silver	< 0.10	mg/l	5.0	92	8/1/97	6010A
Chlordane	< 0.015	mg/l	0.030	87	8/2/97	8080
2,4-D	< 5.0	mg/l	10.0	120	8/2/97	8150
Endrin	< 0.0100	mg/l	0.02	115	8/2/97	8080
Heptachlor	< 0.0050	mg/l	0.008	82	8/2/97	8080
Lindane	< 0.200	mg/l	0.4	85	8/2/97	8080
Methoxychlor	<1.0	mg/l	10.0	64	8/2/97	8080
Toxaphene	< 0.250	mg/l	0.50	56	8/2/97	8080
Silvex	< 0.50	mg/l	1.0	137	8/2/97	8150
Heptachlor Epoxide	< 0.0050	mg/l	0.008	90	8/2/97	8080
TCLP Extraction	COMPLE	TED			8/1/97	1311

#### ND = Not detected at the report limit.

% Recovery	Target Range
40.0	22 135.
23.0	22 135.
39.	15 135.
	40.0 23.0

#### ANALYTICAL REPORT

2960 Foster Creighton Drive Nashville, Tennessee 37204

\* Original report and a copy of the chain of custody will follow by mail.

FOUR SEASONS 4522 ATTN: STUART EILAND

504 INTERSTATE BLVD. SOUTH Lab Number: 97-A063062

NASHVILLE, TN 37210

Sample ID: #8 Date Collected: 7/30/97

Project: 97-15027 Time Collected: 6:30

Project Name: GALLAWAY PITS Date Received: 7/31/97

Sampler: J. JOBE Time Received: 9:00

State Certification: 02008 Sample Type: Solid waste

\*\* SURROGATE RECOVERIES \*\*

Surrogate % Recovery Target Range

Report Approved By: \_\_\_\_\_\_ Report Date: 8/2/97

ANALYTICAL REPORT

2960 Foster Creighton Drive Nashville, Tennessee 37204

n Original report and a copy of the chain of custody will follow by mail.

FOUR SEASONS 4522 ATTN. STUART EILAND

504 INTERSTATE BLVD. SOUTH

NASHVILLE, TN 37210 Lab Number: 97-A063063

Sample ID: #9 Date Collected: 7/30/97

Project: 97-15027 Time Collected: 6:45

Project Name: GALLAWAY PITS Date Received: 7/31/97

Sampler: J. JOBE Time Received: 9:00

State Certification: 02008 Sample Type: Solid Waste

#### **TCLP Results**

Analyte	Result	Units	Reg Limit	Matrix Spike Recovery (%)	Date	Method
Arsenic	< 0.10	mg/l	5.0	102	8/1/97	6010A
Barium	<1.00	mg/l	100	93	8/1/97	6010A
Cadmium	< 0.10	mg/l	1.0	102	8/1/97	6010A
Chromium	< 0.50	mg/l	5.0	95	8/1/97	6010A
Lead	< 0.50	mg/l	5.0	98	8/1//97	6010A
Mercury	< 0.010	mg/l	0.20	93	8/1//97	7471
Selenium	< 0.10	mg/l	1.0	114	8/1//97	6010A
Silver	< 0.10	mg/l	5.0	92	8/1/97	6010A
Chlordane	< 0.015	mg/l	0.030	70	8/2/97	8080
2,4-D	< 5.0	mg/l	10.0	120	8/2/97	8150
Endrin	< 0.0100	mg/l	0.02	146	8/2/97	8080
Heptachlor	< 0.0050	mg/l	0.008	107	8/2/97	8080
Lindane	< 0.200	mg/l	0.4	113	8/2/97	8080
Methoxychlor	<1.0	mg/l	10.0	95	8/2/97	8080
Toxaphene	< 0.250	mg/l	0.50	81	8/2/97	8080
Silvex	< 0.50	mg/l	1.0	140	8/2/97	8150
Heptachlor Epoxide	< 0.0050	mg/l	0.008	120	8/2/97	8080
TCLP Extraction	COMPLETED				8/1/97	1311

#### ND = Not detected at the report limit.

% Recovery	Target Range	
83.0	22 135.	
98.0	22 135.	
38.	15 135.	
	83.0 98.0	

#### ANALYTICAL REPORT

2960 Foster Creighton Drive Nashville, Tennessee 37204

\* Original report and a copy of the chain of custody will follow by mail.

FOUR SEASONS 4522 ATTN: STUART EILAND

504 INTERSTATE BLVD. SOUTH Lab Number: 97-A063063

NASHVILLE, TN 37210

Report Approved By:

Sample ID: #9 Date Collected: 7/30/97

Project: 97-15027 Time Collected: 6:45

Project Name: GALLAWAY PITS Date Received: 7/31/97

Sampler: J. JOBE Time Received: 9:00

State Certification: 02008 Sample Type: Solid waste

\*\* SURROGATE RECOVERIES \*\*

Report Date: 8/2/97

Surrogate	% Recovery	Target Range

ANALYTICAL REPORT

2960 Foster Creighton Drive Nashville, Tennessee 37204

★ Original report and a copy of the chain of custody will follow by mail.

FOUR SEASONS 4522

ATTN. STUART EILAND

504 INTERSTATE BLVD. SOUTH

NASHVILLE, TN 37210 Lab Number: 97-A062138

Sample ID: #1Date Collected:7/28/97Project: 97-15027Time Collected:15:00Project Name: GALLAWAY PITSDate Received:7/29/97Sampler: J. JOBETime Received:9:00

State Certification: 02008 Sample Type: Solid Waste

**TCLP Results** 

TCLI Results				Matrix Spike		
Analyte	Result	Units	Reg Limit	Recovery (%)	Date	Method
· · ·	0.10			102	7/21/07	CO10 A
Arsenic	< 0.10	mg/l	5.0	102	7/31/97	6010A
Barium	<1.00	mg/l	100	89	7/31/97	6010A
Cadmium	< 0.10	mg/l	1.0	97	7/31/97	6010A
Chromium	< 0.50	mg/l	5.0	91	7/31/97	6010A
Lead	< 0.50	mg/l	5.0	94	7/31/97	6010A
Mercury	< 0.010	mg/l	0.20	91	7/30/97	7471
Selenium	< 0.10	mg/l	1.0	111	7/31/97	6010A
Silver	< 0.10	mg/l	5.0	90	7/31/97	6010A
Chlordane	< 0.015	mg/l	0.030	130	8/1/97	8080
2,4-D	< 5.0	mg/l	10.0	106	8/1/97	8150
Endrin	< 0.0100	mg/l	0.02	130	8/1/97	8080
Heptachlor	< 0.0050	mg/l	0.008	123	8/1/97	8080
Lindane	< 0.200	mg/l	0.4	125	8/1/97	8080
Methoxychlor	<1.0	mg/l	10.0	154	8/1/97	8080
Toxaphene	< 0.250	mg/l	0.50	135	8/1/97	8080
Silvex	< 0.50	mg/l	1.0	91	8/1/97	8150
Heptachlor Epoxide	< 0.0050	mg/l	0.008	136	8/1/97	8080
TCLP Extraction	COMPLE	ΓED			7/30/9	1311

#### ND = Not detected at the report limit.

Surrogate	% Recovery	Target Range
Pest/PCB Surrogate, TMX	83.0	22 135.
Pest/PCB Surrogate, DBC	98.0	22 135.
Herbicide Surr., DOAA	38.	15 135.

#### SPECIALIZED ASSAYS ENVIRONMENTAL ANALYTICAL REPORT 2960 Foster Creighton Drive Nashville, Tennessee 37204 \* Original report and a copy of the chain of custody will follow by mail. FOUR SEASONS 4522 ATTN: STUART EILAND 504 INTERSTATE BLVD. SOUTH Lab Number: 97-A062138 NASHVILLE, TN 37210 Sample ID: #1 Date Collected: 7/28/97 Project: 97-15027 Time Collected: 15:00 Project Name: GALLAWAY PITS Date Received: 7/29/97 Time Received: Sampler: J. JOBE 9:00 State Certification: 02008 Sample Type: Solid waste \*\* SURROGATE RECOVERIES \*\* % Recovery Surrogate Target Range Report Approved By: Report Date: 8/1/97

#### ANALYTICAL REPORT

2960 Foster Creighton Drive Nashville, Tennessee 37204

★ Original report and a copy of the chain of custody will follow by mail.

FOUR SEASONS 4522 ATTN. STUART EILAND

504 INTERSTATE BLVD. SOUTH

NASHVILLE, TN 37210 Lab Number: 97-A062139

Sample ID: #2

Project: 97-15027

Time Collected: 7/28/97

Time Collected: 15:10

Project Name: GALLAWAY PITS

Date Received: 7/29/97

Sampler: J. JOBE

Time Received: 9:00

State Certification: 02008

Sample Type: Solid Waste

TCLP Results

TODI ROSCIES				M		
Analyte	Result	Units	Reg Limit	Matrix Spike Recovery (%)	Date	Method
Arsenic	< 0.10		mg/l	5.0 102	7/31/97	6010A
Barium	<1.00		mg/l	100 89	7/31/97	6010A
Cadmium	< 0.10		mg/l	1.0 97	7/31/97	6010A
Chromium	< 0.50		mg/l	5.0 91	7/31/97	6010A
Lead	< 0.50		mg/l	5.0 94	7/31/97	6010A
Mercury	< 0.010	mg/l	0.20	91	7/30/97	7471
Selenium	< 0.10		mg/l	1.0 111	7/31/97	6010A
Silver	< 0.10		mg/l	5.0 90	7/31/97	6010A
Chlordane	< 0.015	mg/l	0.030	80	8/1/97	8080
2,4-D	< 5.0	mg/l	10.0	84	8/1/97	8150
Endrin	< 0.0100	mg/l	0.02	89	8/1/97	8080
Heptachlor	< 0.0050	mg/l	0.008	97	8/1/97	8080
Lindane	< 0.200	mg/l	0.4	100	8/1/97	8080
Methoxychlor	<1.0	mg/l	10.0	106	8/1/97	8080
Toxaphene	< 0.250	mg/l	0.50	107	8/1/97	8080
Silvex	< 0.50	_	mg/l	1.0 74	8/1/97	8150
Heptachlor Epoxide	< 0.0050	mg/l	0.008	106	8/1/97	8080
TCLP Extraction	COMPLET	ED			7/30/97	1311

#### ND = Not detected at the report limit.

Surrogate	% Recovery	Target Range
Pest/PCB Surrogate, TCMX	75.0	22 135.
Pest/PCB Surrogate, DBC	9.0	22 135.
Herbicide Surr., DOAA	60.	15 135.

### SPECIALIZED ASSAYS ENVIRONMENTAL ANALYTICAL REPORT 2960 Foster Creighton Drive Nashville, Tennessee 37204 \* Original report and a copy of the chain of custody will follow by mail. FOUR SEASONS 4522 ATTN: STUART EILAND 504 INTERSTATE BLVD. SOUTH Lab Number: 97-A062139 NASHVILLE, TN 37210 Sample ID: #2 Date Collected: 7/28/97 Project: 97-15027 Time Collected: 15:10 Project Name: GALLAWAY PITS Date Received: 7/29/97 Sampler: J. JOBE Time Received: 9:00 State Certification: 02008 Sample Type: Solid waste \*\* SURROGATE RECOVERIES \*\* Surrogate % Recovery Target Range Report Approved By: \_\_\_ Report Date: 8/1/97

#### ANALYTICAL REPORT

2960 Foster Creighton Drive Nashville, Tennessee 37204

★ Original report and a copy of the chain of custody will follow by mail.

FOUR SEASONS 4522

ATTN. STUART EILAND

504 INTERSTATE BLVD. SOUTH

NASHVILLE, TN 37210 Lab Number: 97-A062140

Sample ID: #3 Date Collected: 7/28/97

Project: 97-15027 Time Collected: 15:20

Project Name: GALLAWAY PITS Date Received: 7/29/97

Sampler: J. JOBE Time Received: 9:00

State Certification: 02008 Sample Type: Solid Waste

#### TCLP Results

				Matrix Spike		
Analyte	Result	<u>Units</u>	Reg Limit	Recovery (%)	Date	<u>Method</u>
Arsenic	< 0.10	mg/l	5.0	102	7/31/97	6010A
Barium	< 1.00	mg/l	100	89	7/31/97	6010A
Cadmium	< 0.10	mg/l	1.0	97	7/31/97	6010A
Chromium	< 0.50	mg/l	5.0	91	7/31/97	6010A
Lead	< 0.50	mg/l	5.0	94	7/31/97	6010A
Mercury	< 0.010	mg/l	0.20	91	7/31/97	7471
Selenium	< 0.10	mg/l	1.0	111	7/31/97	6010A
Silver	< 0.10	mg/l	5.0	90	7/31/97	6010A
Chlordane	< 0.015	mg/l	0.030	81	8/1/97	8080
2,4-D	< 5.0	mg/l	10.0	87	8/1/97	8150
Endrin	< 0.0100	mg/l	0.02	91	8/1/97	8080
Heptachlor	< 0.0050	mg/l	0.008	100	8/1/97	8080
Lindane	< 0.200	mg/l	0.4	100	8/1/97	8080
Methoxychlor	<1.0	mg/l	10.0	130	8/1/97	8080
Toxaphene	< 0.250	mg/l	0.50	109	8/1/97	8080
Silvex	< 0.50	mg/l	1.0	75	8/1/97	8150
Heptachlor Epoxide	< 0.0050	mg/l	0.008	99	8/1/97	8080
TCLP Extraction	COMPLE				7/30/97	1311
ND = Not detected at the report	ort limit.					

Surrogate	% Recovery	Target Range
Pest/PCB Surrogate, TCMX	81.0	22 135.
Pest/PCB Surrogate, DBC	14.0	22 135.
Herbicide Surr., DOAA	60.	15 135.

#### ANALYTICAL REPORT

2960 Foster Creighton Drive Nashville, Tennessee 37204

\* Original report and a copy of the chain of custody will follow by mail.

FOUR SEASONS 4522

ATTN: STUART EILAND

504 INTERSTATE BLVD. SOUTH Lab Number: 97-A062140

NASHVILLE, TN 37210

Sample ID: #3 Date Collected: 7/28/97

Project: 97-15027 Time Collected: 15:20

Project Name: GALLAWAY PITS Date Received: 7/29/97

Sampler: J. JOBE Time Received: 9:00

State Certification: 02008 Sample Type: Solid waste

#### \*\* SURROGATE RECOVERIES \*\*

Surrogate	% Recovery	Target Range
Report Approved By:		Report Date: 8/1/97

#### ANALYTICAL REPORT

2960 Foster Creighton Drive Nashville, Tennessee 37204

★ Original report and a copy of the chain of custody will follow by mail.

FOUR SEASONS 4522

ATTN. STUART EILAND

504 INTERSTATE BLVD. SOUTH

NASHVILLE, TN 37210 Lab Number: 97-A062141

Sample ID: #4 Date Collected: 7/28/97

Project: 97-15027 Time Collected: 15:30

Project Name: GALLAWAY PITS Date Received: 7/29/97

Sampler: J. JOBE Time Received: 9:00

State Certification: 02008 Sample Type: Solid Waste

#### **TCLP Results**

Analyte	Result	Units	Reg Limit	Matrix Spike Recovery (%)	Date	Method
Arsenic	< 0.10	mg/l	5.0	102	7/31/97	6010A
Barium	< 1.00	mg/l	100	89	7/31/97	6010A
Cadmium	< 0.10	mg/l	1.0	97	7/31/97	6010A
Chromium	< 0.50	mg/l	5.0	91	7/31/97	6010A
Lead	< 0.50	mg/l	5.0	94	7/31/97	6010A
Mercury	< 0.010	mg/l	0.20	91	7/31/97	7471
Selenium	< 0.10	mg/l	1.0	111	7/31/97	6010A
Silver	< 0.10	mg/l	5.0	90	7/31/97	6010A
Chlordane	< 0.015	mg/l	0.030	66	8/1/97	8080
2,4-D	< 5.0	mg/l	10.0	70	8/1/97	8150
Endrin	< 0.0100	mg/l	0.02	86	8/1/97	8080
Heptachlor	< 0.0050	mg/l	0.008	91	8/1/97	8080
Lindane	< 0.200	mg/l	0.4	94	8/1/97	8080
Methoxychlor	<1.0	mg/l	10.0	124	8/1/97	8080
Toxaphene	< 0.250	mg/l	0.50	103	8/1/97	8080
Silvex	< 0.50	mg/l	1.0	75	8/1/97	8150
Heptachlor Epoxide	< 0.0050	mg/l	0.008	99	8/1/97	8080
TCLP Extraction	COMPLI	ETED			7/30/97	1311

#### ND = Not detected at the report limit.

Surrogate	% Recovery	Target Range
Pest/PCB Surrogate, TCMX	71.0	22 135.
Pest/PCB Surrogate, DBC	7.0	22 135.
Herbicide Surr., DOAA	112.	15 135.

#### SPECIALIZED ASSAYS ENVIRONMENTAL 2960 Foster Creighton Drive Nashville, Tennessee 37204

#### ANALYTICAL REPORT

\* Original report and a copy of the chain of custody will follow by mail.

FOUR SEASONS 4522 ATTN: STUART EILAND

504 INTERSTATE BLVD. SOUTH Lab Number: 97-A062141

NASHVILLE, TN 37210

Sample ID: #4 Date Collected: 7/28/97

Project: 97-15027 Time Collected: 15:30

Project Name: GALLAWAY PITS Date Received: 7/29/97

Sampler: J. JOBE Time Received: 9:00

State Certification: 02008 Sample Type: Solid waste

#### \*\* SURROGATE RECOVERIES \*\*

Surrogate	% Recovery	Target Range

Report Approved By: \_\_\_\_\_ Report Date: 8/1/97

#### ANALYTICAL REPORT

2960 Foster Creighton Drive Nashville, Tennessee 37204

★ Original report and a copy of the chain of custody will follow by mail.

FOUR SEASONS 4522 ATTN. STUART EILAND

504 INTERSTATE BLVD. SOUTH

NASHVILLE, TN 37210 Lab Number: 97-A062142

Sample ID: #5

Project: 97-15027

Project Name: GALLAWAY PITS

Sampler: J. JOBE

State Certification: 02008

Date Collected: 7/28/97

Time Collected: 15:40

Date Received: 7/29/97

Time Received: 9:00

Sample Type: Solid Waste

**TCLP Results** 

TCLI Results				Matrix Spike		
Analyte	Result	Units	Reg Limit	Recovery (%)	Date	Method
				•		
Arsenic	< 0.10	mg/l	5.0	102	7/31/97	6010A
Barium	<1.00	mg/l	100	89	7/31/97	6010A
Cadmium	< 0.10	mg/l	1.0	97	7/31/97	6010A
Chromium	< 0.50	mg/l	5.0	91	7/31/97	6010A
Lead	< 0.50	mg/l	5.0	94	7/31/97	6010A
Mercury	< 0.010	mg/l	0.20	91	7/31/97	7471
Selenium	< 0.10	mg/l	1.0	111	7/31/97	6010A
Silver	< 0.10	mg/l	5.0	90	7/31/97	6010A
Chlordane	< 0.015	mg/l	0.030	64	8/1/97	8080
2,4-D	< 5.0	mg/l	10.0	119	8/1/97	8150
Endrin	< 0.0100	mg/l	0.02	101	8/1/97	8080
Heptachlor	< 0.0050	mg/l	0.008	91	8/1/97	8080
Lindane	< 0.200	mg/l	0.4	101	8/1/97	8080
Methoxychlor	<1.0	mg/l	10.0	143	8/1/97	8080
Toxaphene	< 0.250	mg/l	0.50	109	8/1/97	8080
Silvex	< 0.50	mg/l	1.0	70	8/1/97	8150
Heptachlor Epoxide	< 0.0050	mg/l	0.008	125	8/1/97	8080
TCLP Extraction	COMPLETI	ED			7/30/97	1311

#### ND = Not detected at the report limit.

Surrogate	% Recovery	Target Range
Pest/PCB Surrogate, TCMX	91.0	22 135.
Pest/PCB Surrogate, DBC	8.0	22 135.
Herbicide Surr., DOAA	89.	15 135.

#### SPECIALIZED ASSAYS ENVIRONMENTAL ANALYTICAL REPORT 2960 Foster Creighton Drive Nashville, Tennessee 37204 \* Original report and a copy of the chain of custody will follow by mail. FOUR SEASONS 4522 ATTN: STUART EILAND 504 INTERSTATE BLVD. SOUTH Lab Number: 97-A062142 NASHVILLE, TN 37210 Sample ID: #5 Date Collected: 7/28/97 Project: 97-15027 Time Collected: 15:40 Project Name: GALLAWAY PITS Date Received: 7/29/97 Sampler: J. JOBE Time Received: 9:00 State Certification: 02008 Sample Type: Solid waste \*\* SURROGATE RECOVERIES \*\* Surrogate % Recovery Target Range

Report Date: 8/1/97

Theodore J. Duello, Ph.D., Q.A. Officer Michael H. Dunn, M.S., Technical Director Danny B. Hale, M.S., Laboratory Director

Report Approved By: